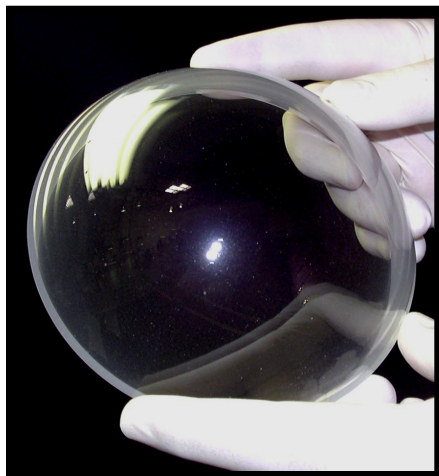


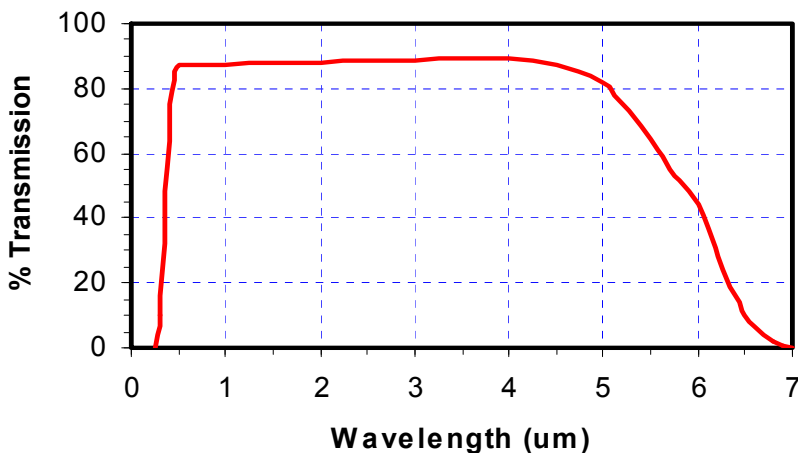
# Spinel

## TECHNICAL DATA

## Spinel Optical Ceramic



### Spinel Transmission



Composition.....	MgAl <sub>2</sub> O <sub>4</sub>
Form.....	Polycrystalline
Lattice Constant.....	8.082 Å
Density* <sup>1</sup> .....	3.58 g/cc
Melting Point* <sup>1</sup> .....	2135°C
Grain Size (typical).....	Bimodal, 25 um average and 150 um average
Crystal Structure.....	Cubic, Spinel
Young's Modulus* <sup>1</sup> .....	276 GPa
Poisson's Ratio* <sup>1</sup> .....	0.26
Thermal Expansion* <sup>1</sup> .....	6.97 x 10 <sup>-6</sup> (30-200 C)
Hardness* <sup>1</sup> .....	1650 kg/mm <sup>2</sup> (Knoop Indentation, 200g load)
Fracture Toughness* <sup>1</sup> .....	1.5 MPa-m <sup>1/2</sup>
Flexure Strength* <sup>1</sup> .....	170 MPa
Specific Heat* <sup>1</sup> .....	0.8191 J/g - °C
Thermal Conductivity* <sup>1</sup> .....	25 W/m-C @ 25°C
Transmission Limits* <sup>1</sup> .....	0.25 to 6.5 microns
Typical Transmission.....	76% @ 0.65 um
(@ 4 mm thickness)	83% @ 1.064 um
	82% @ 4.5 um
Ref. Index Homogeneity..	<5 x 10 <sup>-6</sup> over 3.0" diameter
(RMS)	<9 x 10 <sup>-6</sup> over 4.7" diameter



Index of Refraction			
λ (um)	η	λ (um)	η
0.404	1.7359	1.00	1.703
0.50	1.7230	2.40	1.6807
0.60	1.7155	3.00	1.6677
0.70	1.7108	4.00	1.6386
0.80	1.7075	5.00	1.598

\*1- Reference 1: Handbook of Optics Volume II ,McGraw Hill, Inc. (1995)

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